BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
	)	
Amendment to Part 90 of the Commission's Rules	)	WP Docket No. 07-100

COMMENTS OF THE REGION 21 700 MHz PLANNING COMMITTEE

The Region 21 700 MHz Planning Committee respectfully submits the following comments regarding proposed rules for 4.9 GHz Public Safety Band:

A. Band Plan

9. Region 21 supports site-by-site licensing for the 4.9 GHz band. Of the 86 active authorizations in Region 21, roughly half declare FXT and MO operations throughout a geographic area. The remaining authorize fixed installations. 4.9 GHz equipment is being used in many areas of the region - primarily for dispatch center to radio infrastructure back-haul i.e., point to point operations. It is critical, for such application, that interference free operation is guaranteed, as much as is possible. Site based licensing goes along way toward establishing an interference free operating environment. While it is believed that equipment fielded in the region is frequency agile and has the capability to change channels in the presence of interference, a site-based licensing approach obviates the need for this.

10. The Region 21 RPC feels the National Plan meets regional needs and would therefore, adopt the National Plan in lieu of writing a separate Region 21 4.9 GHz plan. Currently, there appears to be no need to adopt more stringent channel bandwidth requirements in our region. However, Region 21 supports the proposal to allow RPCs to revisit writing a regional plan as determined by future needs.

11. Region 21 supports the proposal to "grandfather all incumbent users" with the provision that all incumbents with authorizations for the entire band certify the channels they are using. Along with this, we would expect all new users be coordinated around incumbents. It is our opinion that a temporary licensing freeze may not be necessary. However, licensing systems that are incompatible with any band plan modifications before promulgation of the final rules would impose unnecessary uncertainty on the process and therefore, should be avoided.

B. Aeronautical and Robotic Use

16. Region 21 supports the proposal to allot Channels 1 thru 5 for aeronautical and robotic use. We also agree with the proposal to exclude unmanned aircraft command and control from this band. Anecdotal evidence suggests equipment operating on 4.9 GHz is currently available to this market. Whether public safety robots are likely to have problems with interference will depend on where they are being used and the nature of the local rf environment. We are not convinced that interference between robots will be a problem. However, interference between robots and fixed or mobile users may be a problem. At present, this is very difficult to quantify as a there is a dearth of experience on this topic. No interference to robot operations in the 4.9 Ghz band has been reported to date.

17. It is also very difficult to predict where robots may find use in our region. However, it seems to us that robots would pose little interference hazard to incumbent P-P applications such as dispatch connectivity. However, we are not sure that the same can be said concerning aeronautical use, grandfathered point to multi-point applications or base/mobile applications. The proposed rules have permanent licensees on channel 1 – 5 as secondary. Given the capabilities for digital equipment to recognize and react to interference to maintain connectivity, why not allow robots and aircraft to use all five of the proposed channels dynamically?

18. Aircraft at altitude have a very broad rf footprint on the ground. On the other hand, grandfathered terrestrial users (at least those who register their operations) are easy to find. So, from a coordination standpoint, ensuring non-interference to grandfathered licensees would

seem a simple exercise. But, fixed P-P installations that remain on channels 1 – 5 will remain secondary under these rules. This may be problematic for critical public safety communications links. However, should one of these links experience interference, moving to the primary channels 14 – 18 should be easily accomplished. Once the coordination mechanisms are in place, costs will likely be similar to terrestrial coordination.

In our opinion setting aside 5 MHz of spectrum for robotic and aeronautic uses will increase the likelihood that equipment designed for this band will come to market. A dedicated frequency plan is what has been lacking and this will go along way toward correcting this issue. We believe that the provision to exclude further terrestrial licensees will not impose costs or burdens on future users as additional spectrum exists to accommodate these users.

C. Coordination

27. Region 21 agrees with the proposal to require frequency coordination in the 4.9 GHz band. Anecdotal evidence supports NPSTC's contention that the lack of site licensing with its inherent uncertainty as to channel and location deployment, is and was a major factor in the decision of some vendors not to recommend 4.9 GHz equipment to their public safety customers. This lack of certainty, along with the self-reporting model of interference protection, lends a low level of confidence that critical public safety applications will be protected from interference.

28. We propose that frequency coordination should be limited to currently recognized public safety frequency coordinators such as APCO. These coordinators understand the critical nature of their product and the need for precision and vigilance in the coordination process. Interference is much more cheaply and easily mitigated during coordination rather than afterward. APCO, as an example, has access to very sophisticated coordination software and the expertise to utilize it properly. All current coordinators have experience with public safety licensees and understand the constraints imposed on public safety applicants due to public funding considerations. They also have experience with international coordination constraints and processes.

A “qualification showing” for “small entities” would seem a prudent step to ensure prospective coordinators are qualified - whatever their size. “Small entities” who cannot show “qualifications” should be excluded from consideration. However, we would reiterate our position that only currently recognized public safety coordinators be allowed to coordinate 4.9 GHz spectrum.

29. We agree with the Commission that the five-day window for 4.9 GHz application review would be burdensome on our RPC. There are two main reasons. First, the Region 21 RPC, not unlike other RPCs, is composed of volunteers from the public safety community. Committee meetings are scheduled a year in advance to allow these busy public safety professionals adequate notice with which to plan their attendance. Pulling together a meeting of the members of the RPC at random intervals with very little notice simply won’t work for us. Secondly, our committee has been advised that the Region 21 RPC is a “public body” under Michigan law and is therefore subject to the Michigan Open Meetings Act.[1] This act requires meetings of public bodies be open to the public. Thus, electronic means of communication for conducting committee business is not available to the Region 21 RPC.

There is another aspect of the five-day review period that is troubling. The proposed five-day review period offers RPCs the, “…opportunity to review and comment that the application meets all national plan criteria and any Region criteria contained in the Regional Appendix”. [2] The five-business day period for public safety coordinator review is an existing mechanism that allows other coordinators five days to object to channel assignments proposed by the original coordinator. In other words, the other coordinators may object to channel assignments that have already been made. It seems to us that an application for 4.9 GHz public safety spectrum should be subject to regional plan review prior to the assignment of channels. Therefore, we would contend that it is the certified frequency coordinators responsibility to “coordinate” applications based on the criteria set forth in regional plans.

[1] 1976 Michigan Public Act 267
[2] NPSTC 4.9 GHz National Plan pg. 12

Thus, the five-day window for RPC review is a source of some confusion. The Region 21 RPC routinely coordinates public safety applications in the 800 and 700 MHz frequency bands. Applicants are required to provide technical details sufficient to enable the committee to analyze the impact to incumbent radio stations of proposed new radio stations. These details are generally provided by equipment vendors. The RPC also ensures the application complies with the non-technical aspects of the regional plan, e.g. funding, notification requirements and interoperability requirements, to name a few. Applications, once coordinated and approved by the RPC, are forwarded by the applicant, along with an RPC letter of concurrence, to the certified public safety frequency coordinator of the applicant's choice. In the 700 and 800 MHz band, these letters of concurrence are required. The frequency coordinators verify information presented on the application and reconcile this information with that given on the RPC letter of concurrence. The certified coordinator then forwards the application to the FCC. In Region 21, applications received in a timely manner are acted upon promptly. This process seems to work well as to date, no cases of unwanted interference to radio stations approved by the Region 21 RPC have been reported. As our regional planning committees have coordinated many applications successfully, why not use the "coordination" model of the 700 and 800 MHz band in the 4.9 GHz band as well?

However, if it is the intent to have certified frequency coordinators "coordinate" applications, and if it is the intent to maintain RPC involvement in the coordination process, RPC review of applications would seem to be good idea. Once an application is "coordinated" by the coordinator, the RPC would review the application and issue a concurrence letter. The applications would be reviewed at regularly scheduled meetings of the RPCs. Otherwise, we agree that RPC involvement with the coordination process would be "redundant to the frequency coordinator's function".

Frequency coordination is essential to maintaining reliable public safety communications networks. The assurance of communication network integrity gained by coordination far outweighs the nominal fees charged by certified coordinators.

We propose the Commission adopt rules for determining Power Flux Density like those already in use at the border with Canada.[3] The treaty requires PFD be calculated, "…using good engineering practice and generally accepted terrain-sensitive propagation models (with location and time variables of 10% and standard 3 arc-second digitized terrain data)."[4] The Treaty also specifies that the offending PFD level be remediated until it is no longer offensive, "In the event that the actual PFD at or beyond the border exceeds the value described … it is the responsibility of the licensee to bring the station's actual PFD into compliance."[5] The PFD should be calculated using the same channel size as that used by the incumbent.

We do not propose the adoption of the Canadian PFD limit of -114dB/m^2 at the border as we believe this value to be too restrictive. The given signal level of -109dBW/m^2 is an appropriate threshold.

30. It appears to us that current technology allocates operating frequencies in the band on a dynamic basis, if desired. When equipment senses activity on a channel, it moves to an interference free channel. This should make it possible to operate short term, small area of operation itinerant systems without the need for frequency coordination. But, we would request the Commission consider authorizing these types of uses with specific operating parameters for AOP and duration. Perhaps a 5 km AOP around a specific location for a period not to exceed, say, 30 days.

However, to avoid interference to public safety systems, we would respectfully request that all instances of new networks etc., be announced to incumbents with a letter of non-interference. Notification of incumbents is not unprecedented.[6] Notification will add no significant delay as non-interference letters do not require acknowledgment from the incumbent. Nor do we believe

[3] Arrangement F Sharing Arrangement Between the Department of Industry of Canada and the Federal Communications Commission of the United States of America Concerning the Use of the Frequency Bands 806-824 MHz and 851-869 MHz by the Land Mobile Service Along the Canada-United States Border

[4] Ibid., Section 5.5(a)

[5] Id., Section 5.5(b)

[6] Region 21 700 MHz Plan page 12

notification requirements add significant costs to the process as there are likely to be few notifications required for any given new public safety system.

D. Database and Existing Licensees

34. The Region 21 RPC applauds the proposal to grandfather existing 4.9 GHz licensees. However, the provision which would require those licensees to report their operations via form 601 may prove unworkable. During our research for these comments, we interviewed local third-party suppliers of 4.9 GHz equipment to seek their input and identify uses of this band in our region. While we did not ask about license compliance, those that responded assured us that their customers installations are in conformance with FCC rules. So, these vendors may prove to be a ready source of information. But, some of these suppliers did not respond to our inquiries and some are no longer in business. This unhappy circumstance may leave their one-time customers at a distinct disadvantage when it comes to identifying technical parameters of equipment already in the field.

35. It is our experience that those entities with personnel conversant with FCC rules and practice are compliant with the 4.9 GHz rules and have properly licensed equipment in the band. However, many agencies lack personnel who are conversant with FCC rules and therefore rely on third parties. Agencies using third party suppliers for license preparation, or those who have made deployments over time, may not be aware of 4.9 GHz equipment in operation in their political jurisdiction. This could be due to unavailability of original equipment supplier's data or to changes in personnel. These licensees will be unable to report that of which they are unaware.

In the fortunate circumstance of a conversant user using licensed equipment with accurate recording keeping, the 1.25 hours estimate given in paragraph 35 may be accurate. But, these fortuitous circumstances may not be enjoyed by some public safety agencies when it comes to equipment operating in this band. While we support using ULS as the 4.9 GHz reference database, utilizing contact information in ULS to gather information on existing licensees may be problematic. Contacting unlicensed public safety users will be even more so. Field work to ascertain what equipment has been deployed may be required. This work is liable to be time consuming and costly. Estimating these costs is also problematic.

37. If any secondary fixed P-P links were fielded in Region 21 by geographic area licensees and not registered, we believe it likely these links are being used for dispatch connectivity. For these licensees, a deadline in which their authorizations revert to secondary status has no real effect. Should properly licensed users interfere with unregistered uses, it may be supposed that the unregistered users will seek relief by determining the source. Should this happen, registration issues can be addressed at that time.

E. Regional Planning

39. To date, the Region 21 RPC has been involved in three planning initiatives in which our committee drafted plans:700 MHz, 800 MHz and 4.9 GHz bands. In the case of the 700 and 800 MHz bands, approved regional plans have been used to build out of many public safety communications systems in the region. In the case of 4.9 GHz, a draft plan was written by our committee very early in the process. This plan was never used. It is our opinion that the Region 21 RPC has played a significant role in the successful buildout of the 700/800 systems in the region. Not least of which is Michigan's Public Safety Communications System. The MPSCS currently supports over 90,000 subscribers with more than 250 tower sites statewide; all the while coexisting with local 700 and 800 MHz systems built out around the state. As systems are deployed and deficiencies in our plans become apparent, we initiate the processes necessary to update our plans accordingly. We believe the same level of involvement in the planning and coordination of the 4.9 GHz band is warranted and will result in similar benefits to public safety in the Region.

At the very least, application review by the RPC will ensure that the RPC has the information necessary to judge the usefulness of current plan requirements as well as trends suggesting needed change. Without RPC involvement, future planning may prove exceedingly difficult.

41. Many regions will find the National Plan parameters sufficient to their needs. But others will determine over time that their original vision for 4.9GHz wasn't quite as clear as first supposed. For these regions, the opportunity to make changes to their plans will be of great

value. The option to default to the National Plan seems reasonable and may be a boon to some regions.

42. Region 21 supports region-specific changes as proposed by the Commission. We appreciate the proposal to allow RPCs the flexibility of establishing a channel for specialized use and the option to establish stricter technical parameters to enhance channel reuse. While variations in regional plans will add a modicum of complexity to the "coordination" process, certified public safety coordinators have modern frequency coordination and database tools and the expertise to handle these slight variations.

43. We agree with the proposed filing time frames for plan submission as granting a reasonable amount of time to even semi-active RPCs to respond. We also appreciate extending the deadline for submission or amendment of regional plans beyond the initial one-year period.

The Region 21 RPC supports streamlining the staff review process for plan modifications. Once approved, a regional plan maximizes access to spectrum for eligible agencies and maximizes efficient use of that spectrum. Any change in a plan that would adversely affect access or efficiency by changing the way channels are "…allotted, allocated or coordinated…"[7] should be scrutinized by the relevant entities. However, the 4.9 GHz band has not been allotted in a manner similar to previous planning efforts therefore, old criteria for determining whether a change is "major" or "minor" may not apply.

700/800 channels were sorted using a special algorithm to maximize inter-regional and intra-regional channel reuse. The channel allotments generated by these algorithms are an integral part of regional plan documents. A region proposing to move an allotted channel nearer to an adjacent regional border must obtain concurrence from their neighboring region as the proposed move may have an adverse effect on the adjacent region's ability to use that channel after the move. This applies to intra-regional borders as well. Therefore, changing 700/800 allotments is considered a "major" change requiring plan amendment. Unlike 700 and 800 MHz, the 4.9 GHz

[7] 47CFR90.527(b)(1)

band has no geographic allotment of channels. Channel allocation is on a first come first served basis by rule.[8] Therefore, in the 4.9 GHz band, changing "allotments" has no application.

In our region, frequencies are allocated primarily based on need and non-interference (we have had none other than eligible agencies apply for these channels). Current plans in Region 21 specify service and interference contours as a basis for non-interference. Changing the service and interference contours would constitute a "major" change. No contour criteria have yet been proposed in the 4.9 GHz band (other than the PFD requirements discussed earlier). Unless this is included in the purview of regional planning committees, contour criteria no longer provide a definition of a "major" change.

Changing the methodology of allocating channels, i.e., changing the required submittals necessary for the committee to process an application, or changing filing windows, constitute a "major" change to our 700/800 MHz plans as well. It does not appear that initial application for 4.9 GHz spectrum will be made to the committees. Nor does it appear that the type of information required of applicants will be the same as that of previous plans. Regional Committee filing windows do not apply. Therefore, application process criteria used to define "major" changes also find no application in this case.

RPCs are to be permitted to adopt changes to the "band plan". Channel aggregation, adopting the "specialized use" channel, and limits on P-P operation have the potential to affect efficient use and access for eligible agencies. Therefore, changes to these criteria may rightly be considered "major". All other plan criteria should be considered administrative and therefore, require minimal staff review.

The proposed rules specify that regional plans must include, "A description of the coordination procedures for permanent fixed …operations." We assume "coordination" in this sense has two meanings - one technical and one administrative. First, coordination of the technical parameters of an application means (to us) the determination of non-interference to other permanent stations and adherence to FCC rules and regional plan requirements regarding the operating parameters

[8] 90.1209

proposed by the applicant. Secondly, we infer "coordination" to mean the assurance that channels will be used for the purpose stated within the application. This aspect of "coordination" is covered by a review of the submittals that must accompany an application and has been discussed previously. The Region 21 committee assumes, under the rules proposed, both aspects of "coordination" to be a function of the certified coordinators.

It is not clear how our RPC is to fulfill the requirement to provide a "description of the coordination procedures" in the technical sense, used for permanent fixed stations. As stated before, our RPC coordinates 700/800 applications to ensure non-interference. For example, the Regional 800 MHz plan requires applicants provide service contours based on a specific propagation model. This raises several questions: Are RPCs to specify in their 4.9 GHz regional plans the propagation models or other methodologies to be used by the certified coordinators? Or will the certified coordinators supply the RPCs with this information at some point in the planning process? Should the certified coordinators decide that the procedures they are using are inadequate, will RPCs be required to submit plan amendments to change the procedures?

To eliminate what may be a time consuming and unwieldy process, we suggest a standard propagation model and coordination procedure, agreed to by the RPCs and certified coordinators to be used by all regions. The particulars can be included in the regional plans. A standard model and coordination procedure has the further benefit of removing regional variation from the process. On the alternative, coordinators may be free to use whatever model and procedure they deem appropriate with regional plans mute on the issue. In either case, the "coordination process" will be transparent to RPCs and applicants alike. Of course, if such a process is outlined in regional plans, any change to the process should be considered a "major" change.

The proposed rules also specify that regional plans will include, "…mechanisms for incident management protocols, interference avoidance, and interoperability."[9] We take "coordination" here to refer to methods used to facilitate the use of 4.9 GHz equipment in multiple agency response. We are not certain that it is within our expertise to specify "emergency management protocols". We prefer to leave this to Emergency Managers. If the intent is to promote

[9] 90.1211(b)(4)

interoperability in this band, why not take the region specific "specialized" channel and augment it (or better yet, replace it) with a nationwide interoperability channel with operating standard determined by the NPSTC or some other body. In this manner, the 4.9 GHz regional plans will emulate their predecessors in making common interoperable resources available to the emergency response community nationwide. This channel should be established by rule and any changes would then be a matter for the Commission.

We would respectfully request the Commission revisit the required interregional plan amendment process. Currently, this process involves the exchange of letters with adjacent regional planning committees. It is our experience that adjacent regions respond in days, weeks or sometimes months, depending on circumstance. Why not fold adjacent region response into the 60-day public comment period for 4.9 GHz plan changes? After the 60-day window, non-response would be considered approval. After all, RPCs are composed of members of the public. But unlike the public, RPCs are informed of plan amendment concurrence requests via email, snail mail or otherwise. It should be possible for even small regions to obtain the consensus of their members in a 60-day window. Particularly as RPCs have authority to change only a very limited subset of plan requirements. This proposal would speed up the entire process. While 60-days is a longer period of time than desirable, at least it is a definite period of time.

F. Technical Standards

45. Voluntary standards may indeed promote growth in capabilities of equipment offered in the band and therefore wider adoption. But if the standards are incompatible, interoperability may suffer. The adoption of standards in the public safety arena is not novel. Neither is the idea that equipment fielded with incompatible "standards" be capable of interoperating. Despite comments lamenting this requirement, disparate 800 MHz NPSPAC systems were marketed and fielded in Region 21 with compatible interoperability capability.[10] Gone are the days when "interoperability" meant taping two radios together. While a national interoperability channel in the 4.9 GHz band would necessarily mandate the adoption of a standard for operation on the interoperability channel, it would not imply a broader mandate.

[10] E.g. NPSPAC MA/COM OpenSky and P25 systems. Each is capable of operating on analog FM interoperability channels.

G. Point to Point and Point to Multi-Point

48. Region 21 supports the proposal to grant primary status to permanent fixed P-P links on channels 14-18. Secondary status of P-P operations on channels 1 – 5 will, in our estimation, likely pose no dire threat to those operations. Should issues arise, relicensing and moving operations to the channels 14 – 18 is a remedy. Modern 4.9 GHz P-P equipment has the capability to operate on any portion of the band and operating frequencies are easily changed.

P-P primary narrowband operations on channels 14-18 must be protected. Since the channels are shared, P-P links may, with judicious coordination, operate free from interference from base and mobile operations of competing public safety organizations. But why not restrict channels 14 – 18 to primary P-P operations? This way, interference from base and mobile operations are no longer a concern.

H. Power Limits

56. Region 21 supports the proposed P-P transmitting antenna gain, beam width and front-to-back ratio parameters. Costs of larger antennas may be mitigated by gains in reliability and the possibility of extending potential link distances. Reliability of links for dispatch and other critical uses is of paramount importance. If a link distance is such that available antennas are not adequate to provide sufficiently reliable operation, paths may be untenable. But, with higher gain antennas, paths that were once not viable may be given new life. In these cases, additional cost of antennas will likely be born gladly.

Changing the antenna rules should not be overly troublesome for the stated reason that antennas already exist that conform to the proposed new rules.

K. Eligibility, Shared Use, and Other Alternatives

1. Extending Eligibility to CII

70. Region 21 lends it support to opening the 4.9 GHz band to CII. Michigan is currently working with several CII entities within the state to provide emergency and disaster communications via the MPSCS. These entities are operating on the MPSCS with waivers as the

current rules do not provide public services entities, such as electric power and natural gas providers, the same definition as the proposed rules allow. Nevertheless, the state of Michigan is working with these providers to maintain critical services to the residents of the state come rain or shine. We cannot speak to whether inclusion of these entities as eligible in the 4.9 GHz band will stimulate increased investment in the band; however, we believe access to this band may facilitate further cooperation and collaboration between CII and public safety.

71. Region 21 does not consider necessary the requirement that the 4.9 GHz band be used by CII entities to provide "public safety services". Once a channel is licensed and granted primary status, coordinators must protect the incumbent. Use of this channel within the licensed parameters has no effect on others whether used for "public safety purposes" or other purposes. In fact, one can argue that any use of the channel is for "public safety purposes" if one remembers that the safety and health of the public is critically dependent on CII providers. This is particularly true of electric service providers, commercial or otherwise. No electricity, no commerce (or much else for that matter).

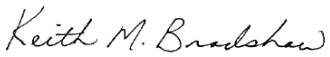
Co-primary status for CII in segments of the band, or the entire band, may be possible with the development of an appropriate standard. This standard would necessarily employ cooperative use/routing and provide for priority for public safety. This standard would encourage and facilitate interoperability. Data is data, so sharing of the bandwidth of deployed fixed permanent stations for example, at a common location housing dispatch operations, should be offered to CII without licensure. However, state and Federal laws may preclude such sharing arrangements.

2. Region 21 is not in favor of leasing arrangements in the 4.9 GHz band.

3. Region 21 is not in favor of commercial use of the 4.9 GHz band.

4. See 3. Above.

Respectfully Submitted,



Keith M. Bradshaw, Chair
Region 21 700 MHz Planning Committee
Supervisor - Metro Region Service Center
Department of Technology, Management and Budget
Michigan's Public Safety Communication System
42145 West Seven Mile Road
Northville, MI 48167
Office 248-380-1080
Cell 517-242-2036
bradshawk@michigan.gov

6 July 2018